

WHAT IS CLAIMED IS:

1. A method for casting a metal article, said process comprising the steps of:

providing a mold body having a longitudinal axis with a hollow bore defining a mold cavity extending axially through said body from a first open end to a second closed end of said mold body, said second end of said body having a substantially frustoconical shape defining a surface converging toward an axial center of said mold body;

orienting said mold body in a vertical orientation with respect to said longitudinal axis and rotating said mold about a vertical axis;

introducing a molten metal into said mold cavity while continuously rotating said mold body at a rotational speed sufficient to distribute said molten metal along said frustoconical shaped surface; and

pivoting said mold body to orient said longitudinal axis of said mold body at an angle with respect to said vertical orientation while continuously rotating said mold body about its longitudinal axis at a rotational speed to distribute said molten metal along a length of said hollow bore in a horizontal orientation; and

solidifying said molten metal to produce a centrifugal cast hollow metal article having a substantially cylindrical shaped hollow body with a closed frustoconical hollow end.

2. The method of claim 1, wherein said body of said cast metal article has a substantially uniform wall thickness.

3. The method of claim 1, comprising rotating said mold body while in said vertical orientation at a speed whereby said molten

metal forms a parabola shape against said frustoconical surface, and where said mold body is pivoted to a substantially horizontal position.

4. The method of claim 1, comprising rotating said mold body while in said vertical orientation and solidifying a portion of said molten metal against said frustoconical surface to form said closed frustoconical end of said article, and thereafter rotating said mold body to said horizontal position.

5. The method of claim 1, comprising forming a compacted, densified layer of particulate refractory material on an inner surface of said mold body and thereafter introducing said molten metal into said mold body.

6. The method of claim 1, further comprising the steps of:
rotating said mold about its longitudinal axis and introducing an amount of a dry binderless particulate refractory material into said mold cavity;

distributing said refractory material along said mold cavity and contacting said refractory material with a blade having a substantially flat surface at an angle sufficient to compact and densify said refractory material and form a compacted layer, and

contacting said compacted layer with said blade, where said blade has a shaping edge to remove excess refractory material and shape said compacted layer.

7. The method of claim 6, wherein said shaping edge of said blade has a shape complementing an inner profile of said mold cavity

and wherein said process forming said shaped compacted layer has a substantially uniform thickness.

8. The method of claim 6, wherein said blade has a front face and rear face and an outer face extending at an incline between said front face and said rear face, said method comprising rotating said mold body in a first direction and contacting said outer face of said blade with said refractory material at a positive angle to compact and densify said refractory material.

9. The method of claim 8, comprising rotating said mold body in a second direction and contacting said outer face of said blade with said refractory material at a negative angle to remove a portion of said refractory material and shape said compacted layer of said compacted material.

10. A centrifugal molding apparatus comprising:
a hollow mold body with a mold cavity having a first open end and a second closed end, said second end having a substantially frustoconical shaped inner surface; and
a support assembly supporting said mold body and being capable of pivoting said mold body between a vertical orientation with respect to a longitudinal axis of said mold body and a horizontal position, and a drive device for rotating said mold assembly about its longitudinal axis at a rotational speed sufficient to cast a molten metal while rotating said mold body in said horizontal position.